

## Phylogeography of the East-Alpine members of the landsnail species *Orcula dolium* (Gastropoda: Pulmonata: Orculidae)

Harl, J., Kruckenhauser, L., Sattmann, H., Duda, M. & Haring, E.

Museum of Natural History Vienna, Burgring 7, A-1010 Vienna, Austria, e-mail: josef.harl@nhm-wien.ac.at, luise.kruckenhauser@nhm-wien.ac.at, helmut.sattmann@nhm-wien.ac.at, michael.duda@nhm-wien.ac.at, elisabeth.haring@nhm-wien.ac.at

*Orcula dolium* has the widest distribution among the species of the genus *Orcula* and inhabits the calcareous parts of the Alps and the Northern Carpathians. Since it had been described in 1801 by DRAPARNAUD, various authors added a minimum of 23 further subspecies. Most of these subspecies represent local forms that inhabit only small, partly isolated regions and differ from the nominate subspecies in their shell shape and the expression of their aperture's folds. Besides the common *O. dolium dolium*, six subspecies have been described from the Eastern Alps.

Two of them, *O. dolium edita* and *O. dolium raxae*, are restricted to different elevations of high mountain areas. According to the literature, the nominate subspecies is sporadically found in the same habitats as the high alpine forms, but no intermediate morphs have been detected. This observation raises the question if these taxa represent distinct species. To determine whether these taxa are differentiated genetically and to reveal their relationships, snails were collected from sites covering the main part of the East Alpine distribution range of the species. Two mitochondrial genes (*COI* and *16S rRNA*) as well as the nuclear *histone H3-H4*-spacer region were sequenced and genetic distances calculated. Additionally, morphometric landmark analyses were conducted to examine if the phylogeny is in accordance with shell morphological differentiation.

In the trees based on mitochondrial data several highly distinct clades were found, which are mostly not congruent with the described taxa. In particular, the high Alpine subspecies do not represent distinct lineages. In the *H3-H4*-spacer region almost no variation was found within the *O. dolium* group and the tree does not reflect the mitochondrial haplogroups.